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ABSTRACT

This report describes comparative evaluations of the Distar I (first grade) and Distar II (second grade) programs which were carried out in 1972-1973. Results showed: (1) the Distar program for first grades had no conclusive advantage over traditional instruction for the development of oral language or reading achievement; and (2) second grade Distar pupils scored below grade placement in word meaning, word study, paragraph meaning, language, and arithmetic skills. Since children were initially selected for the Distar program on the bases of low readiness scores, performance below grade level was not unexpected. The Distar pupils overcame the discrepancy between grade placement and achievement that existed at the end of second grade, and as a group performed at grade level at the end of the third grade. It was suggested that instruction with the Distar system might be improved by providing greater opportunity for children to develop comprehension and sight vocabulary. (BRT)

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The Effect of the DISTAR Instructional System: An Evaluation of the 1972-1973 Title I Program of Winthrop, Massachusetts

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ABSTRACT

The Distar I Reading, Language, and Arithmetic programs were used with two first grade classes. The Distar II programs were used with two second grade classes. Children who had completed two years of Distar instruction received traditional instruction in third grade. First, second and third grade control groups were given traditional instruction.

The Distar program had no advantage over traditional instruction for developing oral language of first grade children. The effect of Distar on first grade reading achievement was inconclusive.

Second grade non-Distar pupils performed significantly better than Distar pupils on the word meaning and word study skills sections of the Stanford Achievement Primary II. Second grade Distar pupils scored below grade placement on subtests of word meaning, paragraph meaning, language, and arithmetic concepts.

Comparable subgroups of Distar and control pupils performed equally well on the Stanford Achievement Primary II at the end of third grade. Performance of the entire third grade Distar group on the Stanford Achievement subtests of word meaning, paragraph meaning, arithmetic comprehension, and arithmetic concepts did not differ from grade placement, overcoming the discrepancy between achievement and grade placement in word meaning, paragraph meaning, and arithmetic concepts found when these children completed grade two.

Review of the 1971-1972 Evaluation

The evaluation of the 1971-1972 Title I program at Winthrop reported the achievement of first and second grade classes who had used the Distar program and several control groups. Achievement in oral language, reading, and arithmetic was studied. It was found that one of two first grade Distar classes gained on the Basic Concept Inventory, a test of oral language. But, to a great extent, results on this test were inconclusive. When Distar and control first grade pupils were compared on an evaluator-constructed First Grade Reading Test no significant differences were found. These first graders apparently performed equally well in reading at the conclusion of first grade. They are the second graders in the 1972-1973 evaluation.

Fifty-one second grade Distar pupils were tested on the Stanford Achievement Test, Primary II. Their grade placement at the time of testing was 2.9. It was found that they were significantly below grade placement on four of the seven subtests (word meaning, paragraph meaning, arithmetic computation, and arithmetic concepts, as shown in Table 6 of the 1971-1972 evaluation report). Since the children had been selected for the Distar program on the basis of initially low readiness scores, performance below grade placement was not unexpected. The children of this group were followed in third grade, and their achievement after receiving traditional third grade instruction is reported in the 1972-1973 evaluation.

A subgroup of the second grade Distar pupils was compared to a group of non-Distar pupils on readiness, first grade reading achievement, IQ, and second grade achievement. Selection of the two groups had been based on similarity of readiness and IQ scores. Only one significant difference, second grade arithmetic computation

favoring the Distar group, appeared. These results are reported in Table 5 of the 1971-1972 evaluation report. The achievement of these groups in third grade is compared in the 1972-1973 evaluation.

The 1971-1972 evaluation stated that the publisher (SRA) intended that Distar I be completed before children enter first grade. The Winthrop schools' use of Distar I as the first grade reading program, contrary to the publisher's intent, must be borne in mind when interpreting the results of the evaluation reports. The program as actually implemented in 1971-1972 reflected not only the characteristics of the published program but also decisions and actions of the schools and teachers participating. It was stated that, in various ways, Distar I and II were supplemented and altered by the teachers. These Title I evaluations, then, describe the effects of the instructional program as conducted in Winthrop.

The 1971-1972 evaluation describes some of the main features of the published Distar program (pp. 3 - 4). It was stated that the major skills areas of Reading I and II are reading, decoding, and comprehension, but there appears to be a lack of emphasis on building such specific comprehension skills as comprehending the main idea and a sequence of events. In Arithmetic I children are taught to count; to use numerals, plus and minus signs, and symbols for equality and inequality; to group and regroup numbers. In Arithmetic II children learn problem solving, multiplication, and fractions. One finding of the 1971-1972 evaluation was that children were often confused about the use of zero as a place holder because Distar teaches the temporary use of superscripted zeros (pp. 15 - 16). The language used in the classroom is stressed in Language I. In

Language II children learn to analyze language, perform logical operations, and answer questions.

Prior research on Distar is summarized in the 1971-1972 evaluation. The results of twenty-one studies in which Distar was employed were summarized. Distar was initiated in the first grade in only one of these studies. No other studies on Distar were listed in the annual summaries of reading research through June 30, 1972 contained in the Reading Research Quarterly, Spring 1973, and in the Journal of Educational Research, April 1973.

Description of the 1972-1973 Program

Distar I was used with one first grade class at the Shirley Street school and another at the Newton school. The class at Shirley Street was smaller (21 children) than the Distar group at Newton (28 children). As was the case the previous year, the program as taught to the children was influenced by teaching style. In various ways the Distar program was altered and supplemented. Some supplementary reading and spelling material was in evidence. Such techniques as "singing" the sounds to encourage word synthesis, observed at Shirley Street, were alterations of the program.

Distar II was presented to one second grade class at each school; each class had received Distar instruction in first grade. The second grade class at Newton school had been instructed at Center school the previous year.

Non-Distar pupils were used as control groups. Children were assigned to Distar and non-Distar first grades at Newton in a way intended to establish two roughly equivalent groups of twenty-eight children in each. Children selected for the first grade Distar class at Shirley Street were those with poorest readiness scores. Hence they are excluded from comparative analysis with the first grade non-Distar children at Newton. Children at Highland Street school selected

as the first grade control group in 1971-1972 were followed in second grade. Children who were included in the second grade study in 1971-1972 were followed in third grade where all (Distar and non-Distar) received traditional instruction. These included "matched" subgroups of Distar and non-Distar children.

The evaluator observed the instructional program periodically through the year. In addition to observing differences of teaching style and evidence of supplementing and altering the program (discussed above), he noted particular aspects of instruction that seemed to encourage or to impede learning, and he observed abilities of, and difficulties encountered by, the children at various stages of learning. One aspect of instruction observed in one classroom that seemed to impede learning, and that might have built unfavorable attitudes toward learning, was the tendency to repeat the presentation of a task, each time in a louder voice, despite the child's repeated failure at the task. It would be preferable to change the instructions or break down the task into simpler parts. The teacher's presentation in this instance suggested that she attributed the child's failure to his inattentiveness, rather than to the difficulty level of the task or its complexity. It is uncertain whether this approach is attributable to teaching style, to Engelmann's philosophy, or to both.

At the beginning of the year several first graders had difficulty with word synthesis when presented with lists of words. A typical response of some children was to pronounce words that rhymed, changing only the initial sound although several letters differed in succeeding words. Some first graders found it difficult to build a sight vocabulary. This is possibly because words were seldom met in sentence context and rapid recognition of whole words, after hav-

ing synthesized them several times, was not encouraged.

By the end of the year first graders seemed to have overcome many of these initial problems. Typically they read with good expression, with understanding, and with the ability to perceive the humor in a story.

Evaluation Design

First grade achievement in oral language and reading was assessed. Distar first graders and the non-Distar control group were pre- and posttested on a First Grade Oral Language Test, prepared for this evaluation. Newton school Distar and control classes were compared on the pretest for the interim evaluation report. They are again compared on the posttest. Pretest scores of each class are compared with their posttest scores for evidence of growth in oral language. Newton school Distar and non-Distar first grade classes are also compared on the First Grade Reading Test. The Shirley Street school first graders' results are also reported.

Second grade Distar classes from Newton and Shirley Street schools are combined as one group and compared to the control second graders at Highland Street school on the Stanford Achievement Test, Primary II, Form W. Treating these Distar pupils as one group is justified on the basis of equivalent selection criteria and equivalent performance as first graders. Performance of Distar pupils also is compared to grade placement at time of testing.

Third graders who had received Distar instruction as first and second graders are compared to third graders who had received traditional instruction and to third graders who had received programmed instruction in reading. Comparison was made with a test of Phonics and an evaluator-constructed Test of Reading Comprehension for the interim evaluation. The posttest comparison is made with

the Stanford Achievement Test. The performance of Distar pupils also is compared to grade placement at the time of testing.

A subgroup of Distar third graders is compared to a subgroup of non-Distar third graders on the tests of Phonics and Reading Comprehension, in the interim evaluation, and on the Stanford Achievement Test used as the posttest. These subgroups consist of children selected in the first grade because of similar readiness and IQ scores, and they are compared on first and second grade reading tests in the 1971-1972 evaluation.

Tests Used

The First Grade Oral Language Test was based on the work of Jean Berko ("The Child's Learning of English Morphology," Word XIV (1958) pp. 150-177) and Carol Chomsky (The Acquisition of Syntax in Children from 5 to 10, Cambridge: MIT Press, 1969). Items consisted of those structures of syntax and morphology found to develop mainly between the ages of 4 and 8. Some easier and some more difficult items are also included. The test was administered by the evaluator and trained examiners in January and June. The following test-retest correlations were obtained: .67 (Newton School Distar, n = 21), .18 (Shirley Street School Distar, n = 20), and .64 (Newton School Control, n = 24). The correlation coefficient obtained at Shirley Street school is not significant. Others are significant, with the probability in each case less than 1 in 100 that the correlation coefficients could be obtained due to chance. The reason for the poor evidence of test-retest reliability at Shirley Street cannot be explained. It should be noted that five months intervened between test administrations, during which change of ability was possible. Test-retest coefficients are typically computed after a duration of a few weeks, with little likelihood of improvement in performance.

The First Grade Reading Test was designed by the evaluator. The test was prepared in two forms, one typewritten for the control group, the other hand lettered with the Distar reading font or alphabet style for the Distar groups. The test was also used in the 1971-1972 evaluation. The vocabulary reflected what was common to both the typical first grade reading vocabulary and the spelling patterns taught in Distar. Hence, the vocabulary was considered appropriate both for Distar and for control groups. The test format was similar to the format of many standardized tests for first graders, such as the Stanford Achievement and the California Reading Test. The forty-item test consisted of short passages followed by questions. The test yielded five scores: 1) main idea, 2) stated details, 3) inferences, 4) sequence, 5) total test. Test reliability was determined in the 1971-1972 evaluation using the Spearman-Brown formula. Coefficients of .96 were obtained for both forms (Distar and non-Distar), indicating very high reliability.

The Metropolitan Readiness Test and the Otis-Lennon Mental Ability Test were used to prove equivalence of Distar and control groups.

Two tests were used in the interim testing of third graders. These were evaluator-constructed tests of Phonics and Reading Comprehension. The Phonics test required the child to write the letter or letters corresponding to sounds in words spoken by the examiner. It yielded five scores: 1) single initial consonants, 2) initial consonant blends, 3) consonant digraphs, 4) vowels, 5) total test. The Third Grade Test of Reading Comprehension yielded five scores: 1) main idea, 2) stated details, 3) inferences, 4) sequence, 5) total test.

Posttesting of second and third graders was done with sections

of the Stanford Achievement Test, Primary II, Forms W (for second graders) and X (for third graders).

Results

First Grade

Table 1 of the interim evaluation shows there were no significant differences between the Distar and control classes at Newton school, and between the two first grade Distar classes on the Oral Language Test pretest. Comparison of pre- and posttest results of each class shows no significant changes for either Distar class and significant gain for the Newton school control class. Results indicate the non-Distar class made significant progress in oral language as measured on this test whereas the Distar classes did not (Table 1). Comparison of the Newton school Distar and control classes shows no significant differences on the oral language posttest indicating the levels of ability in oral language at the end of the year were similar (Table 2).

TABLE 1

PRETEST AND POSTTEST RESULTS ON THE FIRST-GRADE ORAL LANGUAGE TEST

Group	N	Pretest Mean & SD	Posttest Mean & SD	t	P
Distar-Newton	21	11.00 2.19	10.81 3.50	-0.336	NS
Distar-Shirley	20	9.90 2.34	10.60 2.11	1.099	NS
Control-Newton	24	10.00 2.81	11.42 1.98	3.205	<.01

NS = not significant

Newton school Distar and control classes were compared on reading readiness, IQ and the First Grade Reading Test. Although

TABLE 2

COMPARISON OF NEWTON SCHOOL DISTAR AND NON-DISTAR FIRST GRADE CLASSES ON ORAL LANGUAGE POSTTEST, TESTS OF READINESS, IQ, AND READING

Test	Date	Distar Group Mean & SD	Control Group Mean & SD	t	P
		N = 26	N = 26		
Oral Lang. Posttest	5-73	10.54 3.36	11.46 1.92	-1.215	NS
		N = 22	N = 23		
Metr. Rdness	9-72	51.68 17.59	65.48 8.77	-3.352	<.01
Otis IQ	1-73	104.59 16.72	115.74 14.82	-2.370	<.05
Main Idea	5-73	2.95 2.30	4.17 2.41	-1.737	NS
Details	5-73	7.18 4.45	9.61 4.42	-1.836	NS
Inferences	5-73	3.68 2.01	4.39 2.17	-1.137	NS
Sequence	5-73	2.82 1.94	3.04 1.80	-0.404	NS
Total Rdg.	5-73	16.63 9.69	21.22 9.03	-1.641	NS

NS = not significant

children were assigned to these two classes in a manner intended to form two classes of similar ability, similarity on pretest measures of readiness and IQ was not obtained. This may be due to the number of children tested in reading whose results were excluded from the analysis. Teachers reported that some children in these classes appeared to have difficulty with the mechanics of taking the reading test. While all children who were given the reading test were included in the 1971-1972 analysis, the evaluator decided to omit from the analysis of 1972-1973 children who appeared to have had difficulty with test mechanics. A child's test was considered valid

if it satisfied two criteria: 1) items beyond the first paragraph were attempted, and 2) answer choices, one to a question, were attempted for at least one subsequent item. On this basis, the results of five children in the Newton school Distar class and five in the control class were eliminated. No results from the Shirley Street school Distar class were eliminated. Table 2 shows the Distar and control classes at Newton school did not differ significantly on the reading test, although the latter was favored in readiness and IQ.

The scores obtained by the Shirley Street school Distar class are reported in Table 3. None of these test results were eliminated due to problems with test mechanics. The teachers indicated that these children were closely supervised during testing so that such problems could be avoided. However, comparison with Table 2 and with the results of the Shirley Street pupils tested the preceding year, after being instructed by the same teachers, shows the present group at Shirley Street performed decidedly better than any other group. The possibility that the children were inadvertantly given undue assistance on the reading test cannot be ruled out. Other possible explanations lie in the small number of children in the class and, possibly, in improved teaching. To resolve the issue, interim testing in 1973-1974 is planned.

The results on the First Grade Reading Test appear to be inconclusive for judging the relative merits of the Distar program. If the Shirley Street school results are valid, one cannot determine the reason for the vast difference between the two Distar classes.

TABLE 3

SHIRLEY STREET SCHOOL DISTAR CLASS RESULTS ON TESTS OF READINESS, IQ, AND READING (N = 18)

Test	Date	Mean	SD
Metr. Rdness	9-72	54.39	10.16
Otis IQ	1-73	104.67	9.96
Main Idea	5-73	6.06	1.11
Details	5-73	14.00	1.46
Inferences	5-73	6.06	1.11
Sequence	5-73	4.44	1.25
Total Rdg.	5-73	30.56	3.11

Second Grade

Second graders were tested with the Stanford Achievement Test, Primary II, Form W. Results of testing at the two schools were combined for analysis, as was done in 1971-1972. Comparison was made with the control pupils at Highland Street school (Table 4). Children had also received the Otis-Lennon test in January 1973. Two significant differences, both favoring the control group, appeared. These differences were in word meaning and word study skills. No significant differences appeared in paragraph meaning, spelling, language, or arithmetic. Review of the second grade results from the previous year's evaluation does not establish that there is a consistent tendency for the Distar or non-Distar children to excel in any particular area.

Achievement of second grade Distar pupils was compared to grade placement (2.9). These children scored significantly below grade placement in several areas (footnote, Table 4). In both 1971-72 and 1972-73 second grade children who had received Distar instruction in grades one and two scored significantly below grade placement on the Stanford Achievement Test in word meaning, para-

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graph meaning, and arithmetic concepts.

TABLE 4

COMPARISON OF SECOND GRADE DISTAR AND NON-DISTAR CONTROL PUPILS ON IQ AND STANFORD ACHIEVEMENT RESULTS

Test	Date	Distar Group Mean & SD N = 39	Control Group Mean & SD N = 14	t	P
Otis IQ	1-73	100.4 11.4	104.9 16.8	-1.115	NS
Stanford	5-73				
Word Mng.		*2.58 .59	3.03 .48	-2.533	<.05
Para. Mng.		*2.42 .62	2.55 .66	-0.663	NS
Spelling		2.88 .83	2.96 .70	-0.320	NS
Wd. Study Skills		2.71 1.00	3.68 1.56	-2.652	<.05
Language		*2.65 .61	2.54 .59	0.582	NS
Arith. Computation		2.72 .60	2.47 .51	1.401	NS
Arith. Concepts		*2.47 .60	2.84 1.10	-1.542	NS

* Mean scores of Distar pupils that lie below grade placement of 2.9, significance at .05 level.
NS = not significant.

Third Grade

All third graders who had completed Distar instruction and third graders who had had traditional instruction and programmed instruction were compared on interim tests of Phonics and Reading Comprehension and posttests with the Stanford Achievement Test, Primary II, Form X. Table 2 of the interim evaluation shows children from traditional programs were consistently superior in phonics and reading comprehension. The magnitude of differences

(number correct) was not great. Pupils selected for Distar instruction were probably lower in initial readiness for learning in grade one (readiness scores were the basis for selection). As shown in Table 5, children from traditional programs maintained their superiority on the Stanford Achievement Test.

TABLE 5

COMPARISON OF DISTAR AND TRADITIONAL PROGRAM CHILDREN AT THE END OF THIRD GRADE ON THE STANFORD ACHIEVEMENT PRIMARY II, FORM X

Subtest	Distar N = 49 Mean & SD	Traditional N = 118 Mean & SD	t	P
Word Mng.	3.46 .97	3.94 .98	-2.904	<.01
Para. Mng.	3.45 1.08	3.75 .92	-1.790	NS
Arith. Computation	4.01 .90	4.39 .84	-2.616	<.01
Arith. Concepts	3.63 1.24	4.01 1.01	-2.043	<.05

NS = not significant

Table 4 of the interim evaluation report shows fewer differences between Distar and programmed reading groups. The latter obtained higher scores on the test of Phonics, but no significant differences on the Reading Comprehension Test appeared. No significant differences between these two groups appeared on the Stanford Achievement posttest (Table 6).

Distar pupils' achievement on the Stanford was compared to their grade placement at time of testing, which was 3.7. As shown in Table 7, the children scored significantly above grade placement in arithmetic computation and were significantly below grade placement in no other areas tested. Evidently Distar pupils scored

TABLE 6

COMPARISON OF DISTAR AND PROGRAMMED READING CHILDREN AT THE END OF THIRD GRADE ON THE STANFORD ACHIEVEMENT PRIMARY II, FORM X

Subtest	Distar N = 49 Mean & SD	Progr. Rdg. N = 25 Mean & SD	t	P
Word Mng.	3.46 .97	3.83 .91	-1.572	NS
Para. Mng.	3.45 1.08	3.77 .78	-1.306	NS
Arith. Computation	4.01 .90	4.42 .86	-1.916	NS
Arith. Concepts	3.63 1.24	3.76 1.05	-0.459	NS

NS = not significant

below grade placement at the end of grade two in word meaning, paragraph meaning, arithmetic computation, and arithmetic concepts, but were no longer significantly below grade placement in these areas when tested in the seventh month of the third grade (the group tested both times consisted of virtually all the same children). Although traditional instruction intervened between the two tests, considering their low state of readiness when selected for Distar in grade one, the Distar program may have contributed to their success in grade three.

As reported in the 1971-1972 evaluation, a subgroup of Distar and non-Distar children were compared on first and second grade achievement. No significant differences were found on first grade readiness, second grade IQ, and most achievement measures. Most of these children were evaluated on the interim tests of Phonics and Reading Comprehension. The non-Distar group was favored on the Phonics test. All the children were then compared on the

TABLE 7

COMPARISON OF MEAN ACHIEVEMENT SCORES WITH GRADE PLACEMENT OF DISTAR CHILDREN AT THE END OF THIRD GRADE

Stanford Achievement Primary II Form X Subtest	Distar N = 49 Mean & SD	Grade Placement at Testing	t	P
Word Mng.	3.46 .97	3.7	-1.732	NS
Para. Mng.	3.45 1.08	3.7	-1.620	NS
Arith. Computation	4.01 .90	3.7	2.411	<.05
Arith. Concepts	3.63 1.24	3.7	-0.395	NS

NS = not significant

Stanford Achievement administered in third grade (Table 8). No significant differences appeared.

TABLE 8

COMPARISON OF DISTAR SUBGROUP AND NON-DISTAR SUBGROUP AT THE END OF THIRD GRADE ON THE STANFORD ACHIEVEMENT PRIMARY II FORM X

Subtest	Distar N = 19 Mean & SD	Non-Distar N = 20 Mean & SD	t	P
Word Mng.	3.81 1.36	4.29 1.18	-1.190	NS
Para. Mng.	4.02 1.26	4.02 .92	0.003	NS
Arith. Computation	4.34 1.06	4.52 1.12	-0.494	NS
Arith. Concepts	4.25 1.57	4.28 1.26	-0.049	NS

NS = not significant

Third grade results indicate that children who received Distar instruction in grades one and two performed as well, at the conclusion of grade three, as non-Distar children of comparable initial ability. All participants in Distar, as a group, scored below grade level in four areas at the end of grade two but were functioning at grade level at the end of third grade as measured on the Stanford Achievement Test.

Summary of Results

1. The non-Distar first grade class made significant gain in oral language. The Distar and non-Distar classes at Newton school performed similarly on the oral language posttest.

2. Newton school first grade Distar and control classes did not differ significantly in reading achievement.

3. Shirley Street first graders performed well on the reading test. The cause of their superior performance cannot be identified; it cannot be attributed at this time to the Distar program, the small number of children in the class, quality of teaching, or to the possibility that they received undue assistance when tested.

4. Second grade non-Distar pupils performed significantly better than Distar pupils on the word meaning and word study skills sections of the Stanford Achievement. These differences did not appear between second grade groups in the 1971-1972 evaluation.

5. Second grade Distar pupils scored significantly below grade placement on the word meaning, paragraph meaning, language, and arithmetic concepts subtests of the Stanford Achievement. Similar results were obtained in the 1971-1972 evaluation, except for the language subtest.

6. Third graders who had received three years of traditional instruction were superior to former Distar pupils in phonics and

reading comprehension on mid-year testing, and in word meaning, arithmetic computation, and arithmetic concepts on Stanford Achievement posttests. However, former Distar pupils had been selected for Distar instruction because of low readiness for learning.

7. Third graders who had received programmed reading instruction were superior to former Distar pupils in phonics on mid-year testing. No difference appeared on the Stanford Achievement posttest.

8. Third grade former Distar pupils scored significantly above grade placement in arithmetic computation. They were not significantly below grade placement in any subtests of the Stanford Achievement. When this group had been tested at the end of second grade in 1971-1972 (the group consisted of virtually all the same children on both testings), the pupils were below grade placement (grade 2.9 at that time) in four areas of the Stanford Achievement.

9. Comparable subgroups of Distar and non-Distar pupils were followed in third grade. The non-Distar group performed better on the mid-year test of phonics. No differences existed on the mid-year test of reading comprehension or the Stanford Achievement posttest.

Conclusions

Based on the results of testing done in 1972-1973, the following conclusions are drawn.

1. The Distar program appears to have no advantage with respect to the oral language development of first graders.

2. First graders in the Distar program achieve as well as first graders in traditional programs in reading. Evidence of

superior achievement in reading by first grade Distar pupils is inconclusive at this time.

3. Second grade Distar pupils score below grade level on post-tests of word meaning, paragraph meaning, and arithmetic concepts. This result was obtained for two consecutive years and is therefore an expected outcome of Distar instruction, given the characteristics of pupils who are selected for the program.

4. Distar pupils do not perform as well as their peers who received traditional instruction in the areas of reading and arithmetic at the end of third grade. The latter pupils probably had higher initial ability. Distar and non-Distar pupils of comparable initial ability perform equally well after one, two, or three years of instruction. The Distar pupils overcome the discrepancy between grade placement and achievement that exists at the end of second grade, and as a group are performing at grade level at the end of third grade. Therefore, a program of instruction with the Distar system for two years, followed by one year of traditional instruction, results in achievement essentially at grade level for the group as a whole. Within the group are individuals who perform below, others who perform above grade level. Children who are of similar initial ability perform about equally well in Distar and traditional programs of instruction after three years.

Recommendations

1. Instruction with the Distar system possibly can be improved by providing greater opportunity to read connected sentences and paragraphs thereby developing both comprehension and sight vocabulary; changing oral instructions and analyzing tasks to simpler steps when children have difficulty performing a task; providing instruction on specific comprehension skills.

2. Introduction of Distar in kindergarten should be considered.